

SUMMARY: IMPACTS OF THE CLEAR SKIES INITIATIVE ON EPA REGION III¹

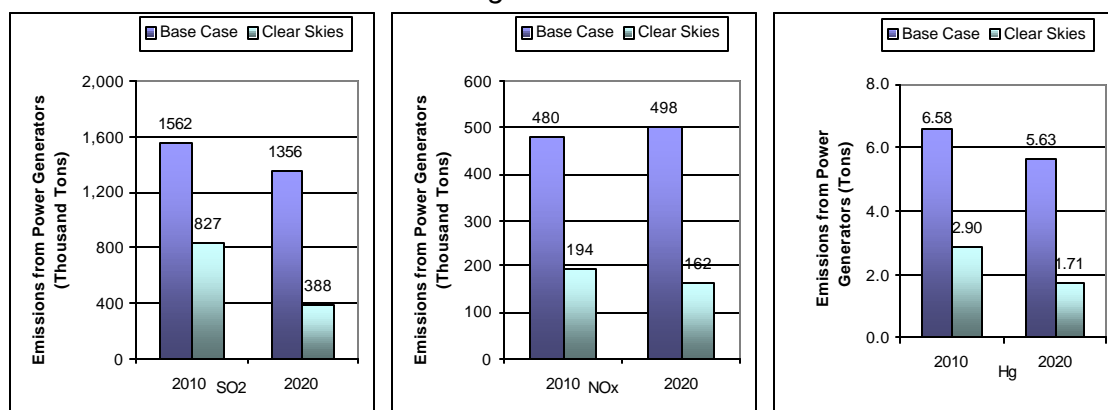
EPA Region III includes Delaware, the District of Columbia, Maryland, Pennsylvania, Virginia, and West Virginia.

Costs: *Nationwide*, the projected annual costs of Clear Skies (in \$1999) are \$3.69 billion in 2010 and \$6.49 billion in 2020.²

Changes in Emissions under Clear Skies: Clear Skies will result in significant emissions reductions from power generators by 2020:

- *Nationwide*, by 2020 SO₂ emissions from power generators are projected to be 3.9 million tons (a 65% reduction relative to 2000 emissions). NOx emissions are projected to be 1.7 million tons (a 67% reduction relative to 2000 emissions) and mercury emissions are projected to be 18 tons (a 63% reduction relative to 2000 emissions). At full implementation, the emission reductions will be 73% for SO₂, 67% for NOx, and 69% for mercury.
- *In EPA Region III* by 2020, Clear Skies is projected to reduce SO₂ emissions from power generators by 81%, NOx emissions by 75% and mercury emissions by 81% relative to 2000 emissions.

Figures 1a, 1b and 1c. Existing Clean Air Act (base case³) vs. Clear Skies Region III in 2010 and 2020



- Emissions rates *in Region III* in 2010 and 2020:

Table 1. Projected Emissions Rates in 2010 and 2020 in Region III from Power Generators

Year		SO ₂	NOx		Hg
		Coal	All	Coal	Coal
		Units	lbs/MMBtu	lbs/MMBtu	lbs/TBtu
2010	Base Case	1.04	0.30	0.31	4.40
	Clear Skies	0.57	0.12	0.13	1.99
2020	Base Case	0.89	0.28	0.31	3.69
	Clear Skies	0.26	0.09	0.10	1.14

¹ The projected impacts are EPA estimates, EIA's modeling would likely show different impacts.

² EPA uses the Integrated Planning Model (IPM) to project the economic impact of Clear Skies on the power generation sector. IPM disaggregates the power generation sector into specific regions based on properties of the electric transmission system, power market fundamentals, and regional environmental regulations. These regions do not conform to States or EPA region boundaries making some compliance options, such as dispatch, and associated costs impractical to differentiate at a State or Regional level.

³ The base case includes Title IV, the NOx SIP call and State-specific caps in CT, MO and TX. It does not include mercury MACT in 2008 or any other potential future regulations to implement the current Clean Air Act.

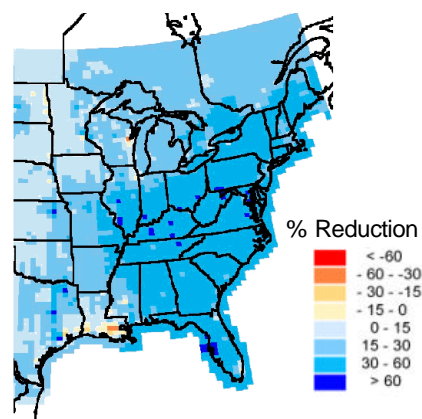
Human Health and Environmental Benefits of Clear Skies: Clear Skies would protect human health, improve air quality, and reduce deposition of sulfur, nitrogen, and mercury.

- *Nationwide* in 2010, early reductions under Clear Skies would result in 6,400 fewer premature deaths and over \$40 billion in annual health benefits from the reduction in fine particulate matter alone.
- *Nationwide* by 2020, when fully implemented, health benefits from fine particles alone total \$93 billion (almost 12,000 fewer premature deaths), far outweighing the costs of the Clear Skies program. Approximately \$18 billion of those benefits would occur *in Region III*.
 - *Nationwide*, using an alternative methodology results in over 7,000 premature deaths prevented and \$11 billion in benefits in 2020—still exceeding the costs of the program⁴.
- *In EPA Region III*, the annual health benefits of Clear Skies in 2020 include:
 - over 2,000 fewer premature deaths
 - over 1200 fewer cases of chronic bronchitis
 - over 40,000 fewer asthma attacks
 - approximately 2000 fewer hospitalizations and emergency room visits
 - over 350,000 fewer lost work days due to respiratory symptoms
- 5 counties (home to almost 3 million people) *in Region III* would come into attainment with the fine particle standard under the Clear Skies program in 2010 (beyond expectations from existing programs)
- By 2020, 8 counties (home to approximately 3 million people) *in Region III* would come into attainment with the fine particle standard under Clear Skies (beyond expectations from existing programs)
- 1 county (home to over 850,000 people) *in Region III* would come into attainment with the 8-hour ozone standard under Clear Skies by 2010 (beyond expectations from existing programs)
- By 2020, 4 counties (home to approximately 3 million people) *in Region III* would come into attainment with the 8-hour ozone standard under Clear Skies (beyond expectations from existing programs)

⁴ The two sets of estimates reflect alternative assumptions and analytical approaches regarding quantifying and evaluating the effects of airborne particles on public health. All estimates assume that particles are causally associated with health effects, and that all components have the same toxicity. Linear concentration-response relationships between PM and all health effects are assumed, indicating that reductions in PM have the same impact on health outcomes regardless of the absolute level of PM in a given location. The base estimate relies on estimates of the potential cumulative effect of long-term exposure to particles, while the alternative estimate presumes that PM effects are limited to those that accumulate over much shorter time periods. All such estimates are subject to a number of assumptions and uncertainties. It is of note that, based on recent preliminary findings from the Health Effects Institute, the magnitude of mortality from short-term exposure (alternative estimates) and hospital/ER admissions estimates (both estimates) may be overstated. The alternatives also use different approaches to value health effects damages. The key assumptions, uncertainties, and valuation methodologies underlying the approaches used to produce these results are detailed in *Technical Addendum: Methodologies for Benefit Analysis of the Clear Skies Initiative, July 2002* that will accompany the technical benefits analyses for the Clear Skies proposal.

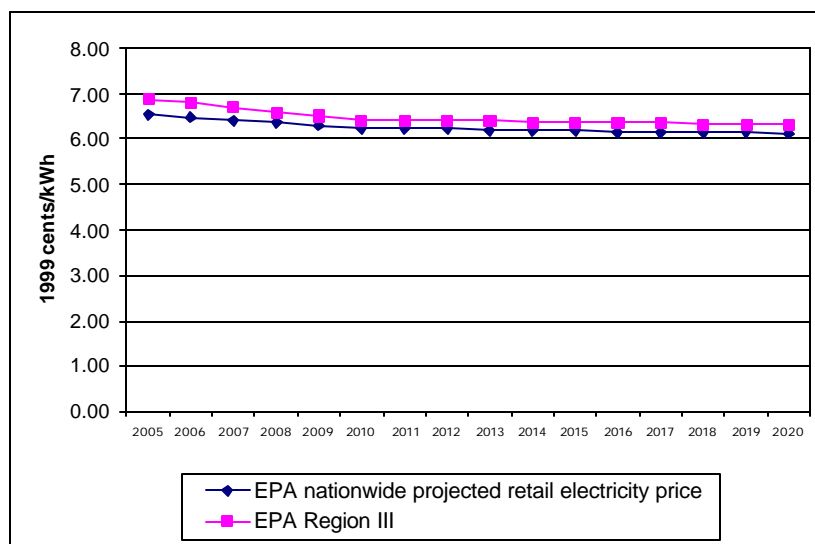
- By 2020:
 - Substantial reductions in sulfur deposition in most of Region III compared to 1996 levels (see map),
 - Sulfur deposition in most of Region III would decrease 30-60% beyond expectations for existing programs,
 - In Virginia, West Virginia, and parts of Maryland and Pennsylvania nitrogen deposition would decrease more than 60% (10-20% beyond existing programs), and
 - The rest of Region III would see reductions in nitrogen deposition of 30-60% (15-30% beyond existing programs),
 - Preliminary estimates indicate mercury deposition would decrease substantially across the Region, and
 - Visibility would improve 1-3 deciviews from 1996 levels (a change of 1 deciview is a perceptible change)

Figure 2. Percent change in sulfur deposition, 1996 vs. Clear Skies (2020)



Changes in Projected Retail Electricity Prices under Clear Skies: In 1999, the average retail electricity price in EPA Region III was approximately 6.71 cents/kWh⁵, which was slightly above the average national retail price of approximately 6.66 cents/kWh (1999 data from EIA).⁶ As shown in Figure 3, retail prices in EPA Region III are projected decrease, but remain above the projected national average between 2005 and 2020.⁷

Figure 3. Projected Retail Electricity Prices in EPA Region III under Clear Skies (2005-2020)



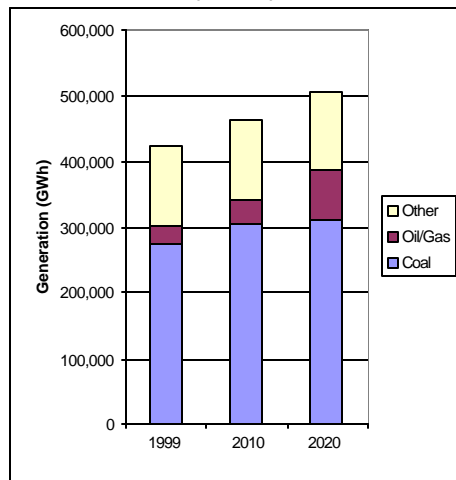
⁵ This was an average of the states in EPA Region III, weighted by utility retail sales

⁶ Source: EIA at http://www.eia.doe.gov/cneaf/electricity/page/fact_sheets/retailprice.html

⁷ Retail electricity prices vary considerably across the United States. Variation in prices can be caused by many factors including access to low cost fuels for generating power, State taxes, and the mix of power plants in the States. Projected retail electricity prices were weighted based on capacity of the NEMS/NERC regions (ECAR, MAAC, SERC) within EPA Region III.

Generation in EPA Region III under Clear Skies: Coal-fired power plants currently produce 65% of the electricity generated in EPA Region III. This contribution of coal-fired generation will first increase slightly, and then decrease in EPA Region III under Clear Skies to approximately 66% by 2010 and 62% by 2020.

Figure 4. Current and Projected Generation by Fuel Type in EPA Region III under Clear Skies (GWh)⁸



- EPA does not project that any facilities in EPA Region III will switch from coal to natural gas in response to the Clear Skies emissions caps. Instead, Region III reduces its emissions through the installation of control technologies:
 - In 2020, there is projected to be approximately 43,100 MW of coal-fired capacity under Clear Skies in EPA Region III. 29,200 MW would have Selective Catalytic Reduction (SCR), and 24,900 MW would have scrubbers.
- 84% of EPA Region III's coal-fired generation comes from coal units with emission control equipment in 2010, and 93% in 2020.⁹

Coal Production in EPA Region III: EPA Region III currently produces approximately 25% of the nation's coal supply, and has about 13% of the nation's coal reserves (2000 Coal Industry Annual, Tables 1 and 33).

- EPA projects a *nationwide* 7.2 % increase in coal production by 2020, relative to 2000. Preliminary analysis shows an increase in total coal production in Appalachia between 2000 (421 million tons) and 2020 (461 million tons) of 9.5%.
- Based on preliminary analysis, EPA projects a slight increase in job slots by 2020 in Appalachia under Clear Skies, relative to a base case with Title IV and the NOx SIP call.

Major Generation Companies in EPA Region III: The ten largest plants in Region III-- each over 1810 MW -- are a combination of nuclear, hydro, coal-, petroleum- and gas-fired units. The major electric utilities include: PECO Energy Co., Pennsylvania Power and Light, Baltimore Gas and Electric, Virginia Electric and Power Co., and West Penn Power Co.

⁸ Note: 1999 data from EIA, aggregated from state-level data found at http://www.eia.doe.gov/cneaf/electricity/st_profiles/ (Table 5).

⁹ Emissions control equipment includes, where applicable, scrubbers, selective catalytic reduction, selective non-catalytic reduction, gas-reburn and activated carbon injection.